Porsche Open Innovation Challenge: Autonomous Transport of Assembled Sports Cars within Production

12/09/2019 At Porsche, we have a strong focus on innovation and new technologies — not only regarding our products but also in terms of production. We — that is Andy Grau and Tobias Strölin — have therefore launched a new Open Innovation challenge. Whereas the previous edition was all about connected cars, the new challenge focuses on automated guided vehicles in the production stream.

Automotive manufacturing is evolving rapidly with advancements in robotics and flexible automation. In fact, smart automation, connectivity and artificial intelligence play an increasingly vital role in manufacturing. In a growingly complex industry, we don't confine ourselves to off-the-shelf technologies.

The importance of Open Innovation and a new idea competition

On the contrary, in line with our business strategy, we're constantly looking for innovative ideas and concepts. We want to open up, contribute to the ecosystem and share ideas to promote innovation. In addition to developing our own solutions and integrating them into our production processes, we're also reaching out to (and investing in) innovative and promising companies. As one of us has said elsewhere, fresh ideas are important for a large company like Porsche. That's why we're collaborating with many startups and launched different idea competitions, such as the Porsche NEXT OI Competition together with HIGH MOBILITY.

Now, we challenge innovators to submit concepts for automated car transport in the post-assembly phase. More specifically, we're looking for a tailor-made solution for the transport of our cars, including sports cars with low ground clearance, within our production facilities. Proposal can now be submitted online. There's a guaranteed award on the line for the first-place winner.

Automated guided vehicles in automotive manufacturing

Automated guided vehicles (AGVs) have been used in the automotive industry for several decades. They are primarily used for transporting goods and materials to different parts of a factory, ranging from on-time delivery of parts to round-the-clock transport. They are driverless, battery-operated vehicles that operate automatically. In recent years, AGV systems have advanced from relatively simple material carriers to intelligent autonomous robots; and they're now an indispensable part of the smart factory,

which is fast becoming a reality for car makers. At Porsche, we call it Production 4.0.

In Zuffenhausen, Porsche has recently implemented an adaptable production line. For the production of the Taycan, we use AGVs that operate in a continuous flow. Porsche is the world's first carmaker to use driverless transport systems in final assembly as a continuous flow. But let's get back to the challenge.

A look behind the scenes and a call for solutions: Innovations for the post-assembly phase

Why do we need innovations in the post-assembly phase? There are existing AGVs that can autonomously transport assembled vehicles. However, these are not suitable for Porsche's production lines due to certain restrictions on vehicles as well as infrastructure conditions. Some of our sports cars (e.g. Turbo and GT variants) have such a low ground clearance that conventional AGVs cannot get under the vehicle. That's why we're looking for smart ideas on how to design AGVs that meet our special requirements.

After our vehicles have been assembled, they are run through various tests and measurements before they finally go through our quality processes. Within individual test stations, the cars move along the assembly line. However, there is no automated transport between the individual test field stations. Therefore, the vehicles are manually driven from station to station by our employees. This means: noise from starting engines and squealing tyres, emissions, inefficient use of employee time, risk of vehicle damage.

Automating this process and eliminating these disadvantages is the goal of the Open Innovation Challenge. We're therefore looking for novel concepts for AGV systems that transport fully assembled Porsches.

The ideal AGV-solution

autonomously picks up, moves and puts down assembled cars in different areas of our factory

navigates in human workplaces and

integrates with automatic testing stations without manual interaction.

How does the Porsche AGV idea competition work?

Here are the details of our challenge:

Our task: At different levels in our value chain, we want to move fully assembled cars with completely

automated processes to their next location. Our production environments provide the framework conditions for this process.

Our vision: The task should be carried out by automated guided vehicles, which can be deployed in different environments and on different routes.

Our proceeding: To find the best concept for such an AGV, we have launched an ideas competition. Different requirements for the concepts are stated as a basic and an advanced challenge. All entries will be evaluated with regard to these requirements.

Your contribution: As one of the leading companies in the field of AGVs, you can participate by pitching your individual concept to fulfill our requirements on our review meeting. We're looking forward to your innovative ideas. Your concept should take the operating environment factors — such as different surfaces, ramps, path width, curve radii, outdoor usage, etc. — into account.

The pitch: All participants can choose to present their concept personally or via video conference. The timeframe for the presentation is 20 minutes, plus 10 minutes for discussion. You can use text, graphics, pictures, formulas, etc. as you may chose. In the pitch, you will show how your concept fulfills the different requirements. We will provide you with a pitch template for your presentation. The presentation is held to Porsche exclusively.

The winners: The best proposals will be tested as prototypes. Porsche wants to acquire a prototype to validate the best suitable concept, thus supporting the realization of your AGV concept. We're firmly convinced that these concepts will spark interest throughout the whole Volkswagen Group.

Are you interested?Apply now!The submission deadline for is 22 September 2019. More information on the Porsche AGV ideas competition can be found at InnoCentive, and you can also register there.

Image Sublines

Path: media/Images/img_1.jpg
Title: Porsche Next Open Innnovation Competition, Ludwigsburg, 2019, Porsche AG
Subline: Andy Grau at the Porsche NEXT OI Finals 2019

Link Collection

Link to this article
https://newsroom.porsche.com/en_AU/2019/digital/porsche-open-innovation-challenge-autonomous-transport-assembled-sports-cars-production-18697.html

Media Package
https://pmdb.porsche.de/newsroomzips/c522d938-351e-4564-b92d-976ed25e34c5.zip

External Links
https://medium.com/next-level-german-engineering

Dr. Ing. h.c. F. Porsche Aktiengesellschaft
Porscheplatz 1
70435 Stuttgart